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Growth and Inflation Disparities in Corridor V

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Abstract
The paper offers a brief discussion about the role of transport infrastructure in the current growth strategy followed by the EU. As a corridor is the *locus* where transport infrastructure and growth should interact more effectively, the central part of Corridor V is considered as an interesting case study. A growth scenario for eight countries is provided to show that wide growth disparities are to be expected during the next decade. The final part of the paper speculates about inflation differentials that are likely to emerge when growth differentials tend to persist inside a monetary union. As the Euro zone will be enlarged to host fast-growers in Corridor V such as Slovenia (maybe as soon as 2007), Hungary and the Slovak Republic, growth differentials and the single monetary policy could make it difficult to deliver a common monetary environment.

Keywords
Growth, money demand; inflation; infrastructure, European Union

JEL code
O47, E31, E47, H54

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1 Introduction

The EU has a transport policy and the idea of building the TENs is an important aspect of that policy, but in considering the available literature dealing with the relationship between infrastructure investment and growth, one soon realizes that the real impact of that policy is still uncertain. There is, in particular, no certainty about the causal relationship between real growth and public capital investment and the wealth of empirical investigations offered in recent years show that results critically depend on adopted methodologies and geographical scale. Even less is known about the dynamic effects of infrastructure in general and, in particular, along a corridor (Section 2). In a recent European project[1] it has been assumed that the relationship between economic growth and transport infrastructure could be more evident along a corridor such as Corridor V than it would be in general. Section 3 provides a growth scenario for the eight countries (France, Italy, Switzerland, Croatia, Slovenia, Hungary and the Slovak Republic) in the central part of Corridor V. Growth differentials obviously exist across the eight countries, but the structural breaks that have taken place in the Centre East European countries in the last decade spell effects that combine with those produced by public infrastructure capital. To a certain extent, growth differentials are physiological and also useful provided that they make real convergence in per capita income possible. However, growth differentials could be a problem in the future enlarged Euro zone if they were wide and lasting. Section 4 concludes the article and provides a discussion of the potential inflationary effects of growth disparities in relation to the Euro zone single monetary policy. We assume that in the future enlarged Euro zone, a single money demand will exist and that it will be similar to that of the present twelve members. Under such circumstances, the single wholesale money market for the enlarged Euro zone must be able to channel liquidity efficiently across the different

[1] The project *AlpenCorS – Alpen Corridor South* has received funding through the INTERREG IIIB Community Initiative (ERDF) from the EU and a number of private and public institutions in four countries. The Ca' Foscari University of Venice was in charge of the Economics area.

countries, otherwise growth differentials combined with a single monetary policy – however valid it may be in the aggregate – would deliver lasting inflation disparities across member countries.

2 Infrastructure and growth

The European Union is a two-layer system; the broader layer is formed by a single market with a currency area (ERM-II), while the narrower one is an embedded monetary union (EMU). The basic economic aim of the EU is growth through market integration and cohesion and its most successful initiative has been the single market. The various microeconomic policies implemented since the creation of the single market in 1992 have been largely aimed at removing market distortions, but - de facto – they encapsulate the old common agricultural policy, other cohesion policies and the EMS-II, a currency area. The Euro zone -- a true monetary union -- pursues macroeconomic stability through the combination of a single monetary policy and surveillance over independent fiscal policies. Nevertheless, since the inception of the single currency, the Euro zone has experienced a full economic cycle but the monetary union does not seem to have delivered as the cycle has been more painful than the general one.

<<< FIGURE 1 >>>

It is well known that the Euro zone continues to under perform the EU, which, in turn, lags behind America. The gap between the UE and the US has increased over the years and the prevailing opinion is that its origin is in the supply side of the economy (Sapir et al., 2004; Florio, 2005; OECD, 2006, Scarpetta et al., 2000).

As the low increase in productivity and in the labour force are seen as the origin of the gap, one could ask whether a lack of infrastructure could have a role in the dismal result. The same issue was famously raised in the

US when productivity was in decline there (Aschauer, 1989) and there is a strand of literature focusing the relation between public infrastructure capital and growth (e.g. Gramlich, 1994, Sturm, 1998 and Ezcurra et al., 2005). Transport infrastructure, however, has also a political importance. Since the days of the Roman Empire transport infrastructure has been used to make strategic integration possible, particularly when new peripheries are added to the core. With reference to a large economic entity loosely integrated at its periphery and with large regional disparities such as the Europe of fifteen years ago, it was then sensible to include integration and cohesion as policy priorities. It also made sense to look at the provision of new transport, communication and energy networks as a convenient way to derive full benefit from the common market. These two considerations clearly were behind the introduction of a transport policy and, in particular, of the Trans-European Networks in transport, telecommunications and energy in the EU Treaty (Maastricht, 1992). It would have been very helpful if increased competition and efficiency in transport and communication activities, and new infrastructure capital had raised accessibility and integration of the peripheral areas and decreased congestion in core metropolitan areas. By reducing costs, deepening integration and eliminating bottlenecks the EU should have boosted its potential growth. Statistical evidence fails to prove this assumption as according the usual criteria the EU and the Euro zone have both underperformed. The most comprehensive explanation of the relatively poor economic performance of the EU has been offered in the *Agenda for a Growing Europe* (Sapir et al. 2004) which helped to focus a fundamental inconsistency between objectives and results. While Europe was providing itself with a large single market, which of course is good for mass industrial and agricultural production, it was undergoing a massively large shift in the composition of demand, production and employment in favour of services. The *Agenda* draws attention to the fact that in order to flourish growth seems to require more than factor accumulation, imitation, market scale and industry. Indeed, the Authors put forward the view according to which gross capital formation

– as the engine of growth -- in a mature service economy appears to be less crucial than it is in industrial economies. In particular, when the economy gets closer to the technological frontier, R&D and effective innovation must replace mere imitation in order to keep productivity growing, This means that the most effective policies for the EU are those able to favour the accumulation of knowledge as well as the entry and growth of new producers. In the *Agenda for a Growing Europe* (Sapir et al., 2004) little attention is given to infrastructure as it is mentioned only as a condition allowing exploitation of the full advantages of the enlarged common market, although it is hypothesized that such advantages are one-shot and thus unable to permanently affect the rate of growth of productivity. In the *Agenda* it is clearly stated, nonetheless, that priority must be given to community projects instead of national ones and particularly to East-West rather than to North-South connections.

The multimodal axis connecting Lisbon to Kiev lies right along Corridor V, and is a perfect example of integrated East-West European connections. The eight countries (France, Italy, Switzerland, Austria, Slovenia, Croatia, Hungary and the Slovak Republic) are ones whose economy is potentially more deeply interested by the central portion of Corridor V, as well as by other TENs . There is, in particular, the large territory which is the target of the Interreg III B, Alpine Space and, more specifically, of the international project dubbed AlpenCorS, formed by a number of partners from France, Italy, Austria and Slovenia.

The problem at hand is the assessment of the real effectiveness of the infrastructure capital represented by the TENs. Economic research, however, offers little guidance to decision makers as the ultimate dynamic economic effects of network availability and, in particular, those delivered by the reduction in transport costs are uncertain (Gramlich, 1994). It seems to be really difficult to establish a direct causal relation between the availability of infrastructure capital and the actual economic performance of different countries, regions and metropolitan areas.

Any cost reduction draws customers closer to sellers and thus broadens the market area. Producers, therefore, can exploit the returns of a larger scale, but must face stronger competition. The ensuing concentration in production (through plant scale and agglomeration) usually increases overall efficiency. This has certainly been the case of the EU, where new infrastructure has delivered a one-off increase in productivity through restructuring, delocalization and just-in-time. The process seems to have increased productivity but reduced employment; in the *Agenda for a Growing Europe,* Sapir and others pointed out the inverse relation between productivity and employment. Winner companies can locate where costs are lower as inside a well-connected and integrated Union, knowledge, goods, people, capital and profits can be moved easily. There is no guarantee that the hardship produced by the loss of jobs and industries in the loser regions will be compensated by more exports to the winner regions and by lower prices of imported goods. In the real world, indeed, there are many examples of how location decisions make economic disparities wider as economic development ultimately depends on the capabilities that different people acquire. It is not at all clear then whether more integration through public infrastructure capital and more transport accessibility automatically implies faster growth everywhere and, particularly, in laggard regions.

An entirely different approach to the problem is to measure the correlation between infrastructure investment and growth. One obvious possibility is that public infrastructure capital acts directly on productivity[2], private investment and growth. At least from Aschauer (1989) and Morrison – Schwartz (1996) it has been argued that after the provision of public capital, producers reduce costs and increase the demand for factors. The return of existing capital, in particular, increases, thus providing an incentive for further investment. Others have observed that the correlation between growth and infrastructure is spurious as the causal relation goes in both directions. China seems to be a prominent case in point. China started building its infrastructure after the take-off which started in the eighties, i.e.

[2] Some prefer to concentrate on production costs.

after financial and human resources were raised to the necessary level. It would have been inefficient to start earlier, i.e. during the take-off, and to devote too many of the scarce resources to infrastructure building. Ultimately, the vast literature offers no guidance as the results seem to depend very much on the methodology used in the assessment. The exiting literature indicates that the relation between infrastructure and economic performance can be assessed both at the national and the regional level (e.g. Ezcurra et al., 2005). As results differ, we have argued that infrastructure and growth can be seen to interact more effectively along a corridor.

3 National growth scenarios

While being unsure about the real efficacy of promoting growth through public capital, the EU must face significant growth disparities. Germany and Italy, for instance, are expected to grow at 1% in 2006 while the growth rate in Ireland is expected to slow down to 8.8%. In this section, we restrict the focus to Corridor V as an interesting case. To draw a growth scenario for the eight countries one could make the traditional assumption of a constant growth rate or the more realistic one according to which important shocks have the capacity to alter the growth rate permanently. By using the trend component in GDP data[3] for the period 1990-2003[4], we obtained the constant growth rates reported in column 1 of Table 1. The range goes from 0.8% to 3.62%. By assuming that events such as transition to the market

<<< TABLE 1 >>>

economy, accession to the EU or the start of single monetary policy and, last but not least, infrastructure building are able to permanently alter the growth rate, one has to deal with trends that are not linear. Indeed, while Austria, France, and Italy were already in the EU, the remaining five

[3] GDP data at 1995 prices and in billions of national currencies for the eight countries are in the IMF data base used for the World Economic Outlook: http://www.imf.org/external/pubs/ft/weo/data/dbcsubm.htm.

[4] The period is 1992-2003 for Hungary, Slovenia, Slovak Republic and Croatia.

countries were not members in the period concerned. France and Italy have also been in the EU since the beginning (1993) while Austria entered only in 1995. Hungary, Slovenia, Slovak Republic and Croatia have undergone transition and made big infrastructure investments. While Hungary, Slovenia and Slovak Republic have been members of the EU since 2004, Croatia is a prospective candidate. Of course, Switzerland has not been affected by such events. The eight countries, therefore, are not only differently equipped in terms of capital, human and knowledge stocks, but underwent different shocks during the nineties. By their very nature, transition and events such as the single market, the Maastricht criteria and the single currency are supposed to change the growth trend. This premise leads us to question the assumption of a constant rate of growth in the countries whose economies have been shocked in such ways. Indeed, while earlier growth theories posited that growth is constant in the long run, nowadays the common understanding is that particular events such as technological change, infrastructure investment, trade integration and institutional reforms could permanently alter macroeconomic performance. Besides a predictable and stable component, there is a non-predictable growth component reflecting the non-transitory impact of those shocks, which makes it very difficult to assess the precise characteristics of the trend in any historical series of GDP data. The distinctive and practical feature of the various techniques available is that the analyst must continuously reformulate the forecast to take into account the fact that the growth rate is continuously changing. In our specific case, it was particularly difficult to separate the trend component from the cyclical component, as the available historical series are very short and are very likely to incorporate structural breaks. We believe that an efficient way to forecast growth rates is to consider all the information available. More precisely, we did not, therefore, try to separate them and we merely estimated the constant growth rate g_n, for each historical series of length *n*, satisfying $\frac{(1+g_n)^n - 1}{g_n} = \frac{\sum_{t=1}^{n} GDP_t}{GDP_1}$. The equation forces all the elements of the historical series to have a

bearing on the estimated growth rate g_n, which changes with the length of t and are inherently transit he time series. The part of the vagaries that are present and have a sufficiently high frequency are automatically smoothed away in the formula and cancel out within the period. A different and successive estimate g_{n+1} of the growth rate can be considered more reliable than the previous one as it is able to encompass both the predictable and non-predictable parts of the trend with reference to a longer time series.

The figures obtained with series ending 2003 (Table 1, column two), show that Switzerland (the country with the highest per capita income level in the group of eight countries) is forecast to grow less than 1%. The countries that have undergone transition are expected to grow quite rapidly: 4% Slovenia, 4.24% Slovak Republic. It is interesting to underline that in the second scenario their growth performance improves substantially; while the forecast for Croatia and Hungary, though slightly reduced, is still significant.

4 The perils of growth disparities in the Euro zone

As explained above, the forecasts were intended to draw a GDP scenario for the countries forming the central part of Corridor V. The methodology adopted offers the advantage of being able to convey at each moment all the information available and, at the same time, to be a very simple way of assessing medium-term potential growth. There is no distinction to be made between trend and cycle to be made, but we know that the trend component implies a given change in the labour force and labour productivity. From the mere economic point of view, the sustainability of the growth process presupposes that infrastructure capital grows at the speed necessary to deliver the necessary increase in labour productivity. Indeed, a shortage of infrastructure is held to impair productivity and growth, even though infrastructure is not a sufficient condition for growth. The EU has given a role to transport, communication

and energy networks at the community level on the assumption that not only are they a basic precondition of growth, but that they are also necessary to exploit the advantages of the internal market. Besides harmonization, interoperability, market liberalization and mode rebalancing, the EU has planned to promote supra-national networks.

The forecast shows that growth disparities are likely to appear, at least for a while across the countries that are in the Euro zone and those that, at a certain stage, are expected to become new members. The preceding argument indicates, furthermore, that infrastructure capital or other factors could produce unintended growth disparities across the EU. The very existence of large disparities in per capita income is a problem in itself, but the existence of wide and permanent disparities in the rate of growth inside the Euro zone would be a further problem as it could bear upon inflation differentials. As inflation differentials imply disparities in the real interest rates and the real exchange rates of the different countries inside the Euro zone, the ECB finds it difficult to deliver a single monetary climate across the Euro area. Since the single monetary policy cannot target inflation disparities, the ECB is interested in removing the causes of such disparities. The ECB apparently holds the view (ECB, 2005) that, to some extent, inflation differentials are desirable as they are the outcome of an equilibrating adjustment process. Inflation differentials, indeed, come in two forms: bad and good. According to the so-called Balassa-Samuelson effect, inflation in a country is proportional to the gap in the productivity growth rates of exportable and non-exportable goods and services. This means that countries that are catching up should experience higher inflation. This is a typical example of good inflation differentials. Besides these differentials, however, there are differentials which are excessive or bad as they appear to be the product of structural inefficiencies, market rigidities and fiscal mismanagement. We observe that both these differentials come from the supply side of the economy. The implementation of a single monetary policy in the enlarged Euro zone would become difficult if the nominal

interest rate were to be the same across the different countries while national growth rates were markedly different, as real interest rates and real exchange rates would diverge across the member countries. It comes as no surprise that the ECB is interested in monitoring inflation differentials in order to identify structural barriers that hamper macroeconomic adjustment of the supply side and distort the impact of the single monetary policy . The ECB, however, does not even contemplate the possibility that similar distortion could come from the demand side, and there is a risk that the single monetary policy could add to the mentioned sources of inflation differentials thus not only more making the conduct of monetary policy more difficult, but also making it harder to correctly identify the effective inflationary impact of supply inefficiencies.

There is, indeed, the distinct possibility that a single monetary policy combined with permanent disparities in the rate of growth could become a further source of inflation differentials particularly if the different national monetary markets fail to integrate in a single market. Consider current money demand in the Euro zone. Conventional money demand models assume that real GDP, price level and interest rates are the determinants of money demand and the recent estimates of the euro-wide money demand equation are no exception. Bruggeman et al., 2003 and Brand – Cassola, 2004, and ECB, 2004 for instance, estimate that a stable long-run demand equation for the whole Euro area such as: $m_t - p_t = k + \alpha y_t - \beta i_t$ exists; where: $m_t - p_t$ and y_t are logarithms of the stock of broad money deflated by the GDP deflator and real GDP. k is a constant, and i_t is the spread between a market interest rate and money's own rate of return, i.e. the opportunity cost of holding liquidity. In the different estimates, it turns out that the elasticity of GDP is always close to 1.3, i.e.: $\alpha = 1.3$. The estimate of the other parameter is significant, but changes according to the market interest rate used to define the spread. As a matter of fact, it is $-1.8 \le \beta \le -0.8$. The European Central Bank apparently manages to offer the Euro system the right quantity of liquidity in the whole Euro area and to

keep the short term interest rate at the right level. In doing this, it apparently uses excess liquidity measures derived from an equation of the type described above and a large series of other indicators on prices and costs, on an aggregate basis. When there are permanent growth disparities, the aggregate excess liquidity measure cannot signal differences stemming from the disparities in the growth rates. When real growth rates differ across the Euro zone, the single monetary policy implies inflation rates which are different across space. This can easily be seen by differentiating the demand equation with respect to time. This makes it possible to translate the relevant real growth rate into the inflation rate, from the demand side of the economy. Let $\dot{y}_r$ indicate the national growth rate in country *r* and $\dot{p}_r$ the corresponding inflation rate. When the money stock grows at the target constant common rate $\dot{m} = 0.045$ (Brand - Cassola, 2004), the equation in terms of percentage rates of changes corresponding to the one defined above is: $\dot{p}_r = 0{,}045 - 1.3\dot{y}_r$ as it is sensible to assume, the spread as a constant, at least in the long run. Following this approach, the growth rates given above for the members of the European monetary union and its future members can thus be readily translated into the inflation rates shown in Table 2.

<<< TABLE 2 >>>

The state of knowledge about money demand in the Euro area seems to corroborate the existence of a pan-European or single money demand equation more stable than national counterparts (Issing et al., 2001); it is, therefore, logically correct to use the single money demand equation for such different entities for which a national real growth rate is estimated. As the Euro money market is formed by the wholesale market (formed by the ECB system and the banks) and the national retail money markets (households and non-bank institutions) there is the need that liquidity spontaneously flows from places where it is abundant to places where it is scarce through the wholesale market. In a really integrated monetary market

this should hopefully be the case, but it is not immediately obvious that this really happens in the Euro zone, i.e. that liquidity spontaneously flows from slow growers to fast growers. We know, indeed, that while the single monetary policy has successfully stabilized member countries' inflation rates, a significant degree of country heterogeneity still pervades the Euro area (Busetti et al., 2006).

As the long run growth rate of the Euro zone in the current way is estimated to be 2.25%, it turns out that Austria, whose estimated growth rate practically coincides with this figure, is bound to have an inflation rate lower than 2% (Table 2), i.e. perfectly in line with the ECB's definition of price stability. Not so for France and Italy which, by the same token, would permanently be above the target rate. The prospective members of the Euro zone -- Hungary, Slovak Republic and Slovenia -- have been able to growth faster than the average rate 2.25% and are expected to have a very low or even negative inflation rate. The Slowak Republic and Slovenia, in other words, will have to come to terms with permanent deflationary pressure from the demand side.

In conclusion, the existence of a single monetary policy and a single nominal interest rate will not prevent real interest rates from diverging inside the Euro zone. In the countries where the real growth rate is permanently lower, inflation will be higher (as in France and Italy) and the real interest rate accordingly lower. In countries where real growth is permanently higher (as in the Slovak Republic and Slovenia) inflation will be lower and real interest rates higher. In the enlarged Euro zone, the ECB would probably be forced to revise up the estimated average steady state real growth rate. This should bring about an increase in the target money aggregate growth. Perhaps the parameters of the money demand equation would be changed as well, but the argument above will still apply. Any increase in the dispersion in real growth rates would deliver an increase in the dispersion in inflation rates. The inflation target of the ECB is defined over the whole Euro zone, but the existence of a single money demand and the existence of inflation disparities will not be without consequences:

inflation pressure in slow-growing countries would have to coexist with deflation pressure in the fast-growing countries. It remains to be seen whether the single monetary market would be able to move the existing liquidity from where it is abundant (i.e in slow growers) to where it is scarce (i.e. to fast growers). If the wholesale money market in the Euro zone were not able to completely rebalance liquidity across borders of national retail money markets, the disparities in inflation rates will impact differently real exchange cross-rates and the resulting differences in real interest rates will impact differently market values of all real and financial assets in the national economies.

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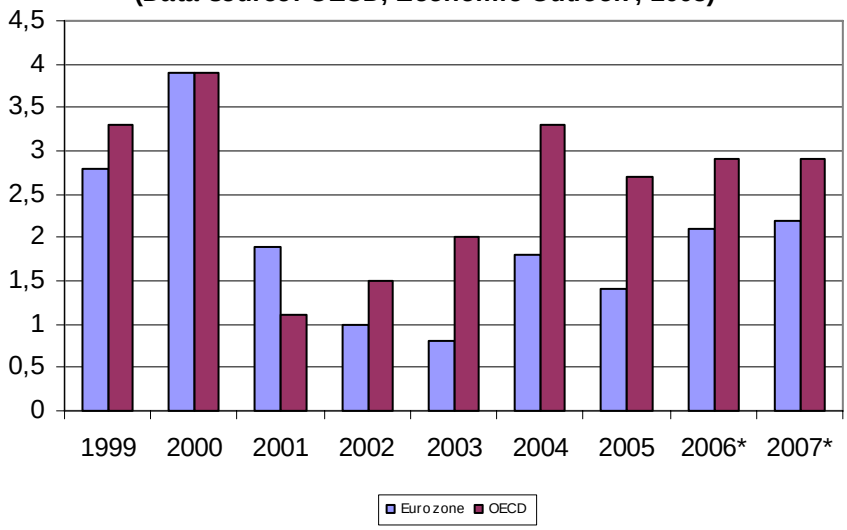
Fig 1 - Real GDP growth in the Euro zone and the OECD
(Data source: OECD, *Economic Outlook* , 2005)



Tab 1. Real GDP growth

	First scenario (1)	Second scenario (2)
Austria (*)	1,89	2,24
France (*)	1,59	1,5
Italy (*)	1,3	1,48
Switzerland (*)	0,8	0,75
Croatia (°)	2,68	2,49
Hungary (°)	2,79	2,51
Slovak Republic (°)	3,62	4,24
Slovenia (°)	3,46	4

(*) 1990-2003. .

(°) 1992-2003

Tab 2. Growth differentials and inflation

	Real growth	Inflation
Austria	2,24	1,6
France	1,5	2,6
Italy	1,48	2,6
Slovenia (*)	4	-0,7
Hungary	2,51	1,2
Slovak Republic	4,24	-1,0
Croatia	2,68	1,0

(*) likely to enter the Euro zone in 2007